STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID # 1471

Motorola, Inc.
Fort Lauderdale, FL
Signed March 15, 1996

Facility/Unit Type: Electronics Manufacturer
Contaminants: Cadmium and Chromium
Media: Soil and Groundwater
Remedy: Capping, Natural Attenuation with Groundwater Monitoring and Institutional Controls

FACILITY DESCRIPTION

Motorola owns and operates an 80.1 acre manufacturing facility at 8000 West Sunrise Boulevard, in Broward County, Plantation, Florida. Currently the site is used for manufacture and assembly of electronic components and equipment. The Motorola property is zoned Large Light Industrial (1-L2P). Adjacent properties are zoned for both commercial and residential use.

A RCRA Facility Assessment (RFA) was conducted at Motorola in 1987. Four SWMUs were identified during the RFA: 1) the wastewater treatment system, 2) the RCRA storage facility, 3) the former lagoon area, and 4) a man-made lake. Based on the results of the RFA, an RFI was required at SWMU no. 3, the Former Lagoon Area.

The former lagoon was located southeast of the manufacturing building. Approximately 6,000 gallons per day of pretreated wastewater was discharged to the unlined diked evaporation lagoon for a period of approximately nine years, 1971 to 1980. While in operation, the lagoon handled wastewater from the nickel-cadmium battery manufacturing process, the metal plating process and the crystal manufacturing process. The lagoon was closed in October 1980. The closure consisted of removal of approximately 6.3 million pounds of sludge, soil and water from the former lagoon. The materials were disposed of at the SCA Services landfill in Pinewood, South Carolina. The excavated lagoon was backfilled with road-grade limestone which acted to stabilize the remaining metals in the soil underlying the fill.

Underneath the former lagoon area, soil is impacted to two to three feet. This soil is underlain by a laterally continuous dense limestone stratum. In the site vicinity the unconfined water table aquifer extends to a depth of approximately 200 feet where the strata grades to sediments with a high proportion of low permeability sand and clay. The U.S.G.S. has subdivided the aquifer into an upper surficial zone and a lower surficial zone, based on the influence of the drainage system found throughout Broward County. The rate and direction of flow in the upper surficial zone is dominated by drainage canals. The rate and direction of flow in the lower surficial zone is dominated by the regional flow pattern.

Sampling investigations conducted from 1991 to 1994 revealed the presence of cadmium in the soil and chromium in the groundwater in the vicinity of the former lagoon. Both soil and groundwater contamination are located in the vicinity of the former lagoon and contained within the facility boundary. Contamination above the screening levels was not detected in the surface water or sediment samples taken from the on-site drainage ditch.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Contaminant	Maximum Concentration (ppm)	Unrestricted Use Media Cleanup Standard (ppm)	Health-Based Cleanup Goal	Point of Compliance	Migration/ Attenuation Monitoring
Soil	Cadmium	1770 (0.0 - 0.5') 4190 (2' - 3')	40	480	Not Given	Not Given
Groundwater	Chromium	0.120 (15' depth) 0.470 (25' depth) 0.320 (45' depth)	0.1	11,000	A-25 C-45 K-45 L-75	H-25, O-25 B-35 Q-45, R-45

EXPOSURE PATHWAYS

The RFI found soil contaminated with cadmium and groundwater contaminated with chromium. Based upon unrestricted use, the media cleanup standards would be the same as action levels, 40 mg/kg for cadmium in the soil and 0.100 mg/L for chromium in the groundwater. However, a risk analysis of the current and reasonably anticipated future use of the environmental media in the vicinity of the SWMU indicate limited exposure to the contamination. For current and reasonably anticipated future use, there is potential for exposure to construction workers and on-site employees via incidental ingestion, dermal contact and inhalation of fugitive dust of soils contaminated with cadmium. There is an exposure potential to construction workers via incidental ingestion and dermal contact with groundwater contaminated with chromium during trenching activities.

Because of the limited current and reasonably anticipated future exposure, a conditional remedy has been selected at the facility. A conditional remedy, in essence, delays cleanup to unrestricted use, while addressing current exposure. Thus, the cleanup objectives were established 1) to address the risk from the current and reasonably anticipated future use, as measured by health-based concentrations (HBCs), and 2) prevent long-term exposure. The HBCs are 480 mg/kg for cadmium in soil and 11,000 mg/L for chromium in groundwater. However, it should be noted that the long-term goal for chromium in groundwater is still 0.100 mg/L.

SELECTED REMEDY

The selected remedy includes filling the former lagoon area to grade; installing a compacted limestone subbase over the affected soil; and placing a two-inch asphaltic concrete cap over the subbase. The cap will be used as an additional parking area for the Motorola facility. The parking lot/cap will be constructed such that it is elevated above the existing grade and sloped to the edges. Surface water run-off will then discharge into an onsite stormwater retention pond. The parking lot/cap will serve to limit any further infiltration of rainfall through the residual contaminated soil. Natural attenuation of the groundwater will be utilized. Groundwater monitoring will be initiated to monitor the attenuation and migration of the chromium in the groundwater.

In addition, a deed notification will be placed on the deed for the property indicating the presence of residual contamination and the assumptions of exposure under which this residual contamination does not pose a threat to human health or the environment.

The total estimated capital costs and annual operating and maintenance costs for the remedy are $140,000 and $19,125 for the first year, $14,075 to $23,370 thereafter, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Public participation has taken place for the selected remedy through publication in a local newspaper of general circulation and broadcast of a 30-second public service announcement. The public comment period extended from January 25, 1996, to March 11, 1996. Comments were not received, nor was a public meeting requested. Therefore there were no changes to the original proposal for the selected remedy.

NEXT STEPS

Due to the nature of the selected remedy, it was determined that the remedy would best be implemented through performance-based standards. Therefore, Corrective Measures Implementation (CMI) work plans and designs will not be submitted. Rather, Motorola will keep EPA informed through progress reports, and demonstrate the effectiveness of the selected remedy through semi-annual and annual corrective action effectiveness reports.

Motorola is obtaining local governmental construction permits for the installation of the parking lot/cap. Within fifteen days of receipt of these permits, Motorola shall provide notification to EPA of receipt of the permits. Implementation of the selected remedy will begin within thirty (30) days of receipt of these permits, and installation of the parking lot/cap should be completed within one-hundred eighty (180) days after initiation. If notification of receipt of the local governmental permits is not received by September 11, 1996, Motorola shall submit documentation demonstrating, to the satisfaction of the Regional Administrator, that despite their best efforts, Motorola has not been able to obtain the local permits. Within sixty (60) days of completion of the parking lot/cap, Motorola shall submit a Construction Completion Report.

As part of the groundwater remediation, groundwater monitoring will be initiated within sixty (60) days of completion of the parking lot/cap, or, if construction of the cap does not begin within thirty (30) days of the permit modification, groundwater monitoring will be initiated by September 11, 1996. Within ninety (90) days of issuance of permit modification, Motorola shall submit a Statistical Analysis Plan for the evaluation of groundwater monitoring data.

Within one hundred twenty (120) days of the permit modification, Motorola shall submit proposed language for the deed notification, notifying interested parties of the presence of residual contamination due to waste management practices at the facility.

KEY WORDS:
groundwater, soil, conditional remedy, health-based concentrations, natural attenuation, cap, chromium, cadmium

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